

# FOG-Based Inertial Sensor Solutions

FIBERPRO specializes in fiber optic measurement  
and sensor devices

Your innovative navigation  
solution provider



**1995**  
Foundation of FIBERPRO



**2022**  
Year of Public Listing

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FIBERPRO is a specialized technology company providing integrated navigation solutions based on Fiber Optic Gyroscope inertial sensor technology.

## Creating New Value with New Technology

At FIBERPRO, our commitment to innovation is more than a slogan it's the driving force behind everything we do. Rooted in cutting-edge technology, we go beyond merely generating value. FIBERPRO is dedicated to delivering creativity and innovation directly to our customers.

As specialists in optical measurement and fiber optic sensors, our focus is clear — to be a trusted industry leader, advancing through continuous innovation and unwavering commitment to excellence.



## Why Choose FOG?

Fiber optic gyroscopes (FOG) provide unparalleled reliability and performance, overcoming the current limitations of traditional and ring laser gyroscopes. This makes FOG the preferred choice for next-generation navigation systems.

- ▶ **All solid state**  
No moving parts, making them highly durable and resistant to noise and vibration.
- ▶ **Scalability**  
Performance can be tailored to meet specific requirements depending on the length and configuration of the optical fiber.
- ▶ **Low maintenance cost**  
As a solid-state device, it offers long service life with minimal preventive maintenance.
- ▶ **Reliable components**  
Utilizes high-performance and reliable components that comply with telcordia standards, commonly used in telecommunications.
- ▶ **Precision and stability**  
Offers exceptional accuracy and stability, even in harsh and challenging environments, making it ideal for navigation in aerospace, defense, and industrial applications.





## Fiber Optic Gyroscope (FOG)

A Fiber Optic Gyroscope (FOG) is an advanced inertial sensor that uses the interference of light within optical fibers to measure angular velocity. Its all-solid-state design ensures high reliability, precision, and durability, making it a core component in modern navigation and stabilization systems.



## Inertial Measurement Unit (IMU)

A FOG-based Inertial Measurement Unit (IMU) is a high-precision navigation device that integrates Fiber Optic Gyroscopes (FOG) and accelerometers to measure angular velocity and linear acceleration. This combination enables accurate position, orientation and motion tracking in dynamic environments, making it an essential component in modern navigation and stabilization systems.

### Single Axis Fiber Optic Gyroscope

#### FG 150



- Bias Repeatability | 1.0° /hr
- Scale Factor Accuracy | 1000 PPM
- Angle Random Walk | 0.035°/√hr (typ.)
- Dimension | 60 mm x 60 mm x 25 mm
- Weight | 165 g

### Single Axis Fiber Optic Gyroscope for space grade

#### SAG-SS



- Bias Stability | 0.02° /hr (1000 sec)
- Scale Factor Accuracy | 500 PPM
- Angle Random Walk | 0.005°/√hr
- Dimension | 123 mm x 123 mm x 63 mm
- Weight | 1.0 kg

#### P-FOG



- Bias Stability (3σ) | 0.01° /hr (1 hour)
- Scale Factor Accuracy (3σ) | 200 PPM
- Angle Random Walk | 0.001°/√hr
- Weight | 4.0 kg

### Tactical Grade IMU

#### FI 180



- Gyro Bias Repeatability | 0.5° /hr
- Gyro Scale Factor Accuracy | 100 PPM
- Accel. Bias residual error | 0.5 mg / 0.7 mg / 1.2 mg
- Accel. Bias Repeatability | 1.0 mg / 1.3 mg / 1.5 mg
- Accel. Operating Range | 8g / 15g / 40g
- Dimension | 88.9 mm Ø x 84.5 mm (H)
- Weight | 810 g

### Tactical Grade IMU

#### FI 200P



- Gyro Bias Repeatability | 0.5° /hr
- Gyro Scale Factor Accuracy | 100 PPM
- Accel. Bias Repeatability | 0.3 mg
- Accel. Operating Range | Up to 50 g
- Dimension | 88.9 mm Ø x 84.5 mm (H)
- Weight | 900 g

### Navigation Grade IMU

#### FI 210



- Gyro Bias Repeatability | 0.025°/hr
- Gyro Scale Factor Accuracy | 200 PPM
- Accel. Bias Repeatability | 0.18 mg
- Accel. Operating Range | 40 g
- Dimension | 225.5 mm x 189 mm x 156 mm
- Weight | 8.0 kg





## Inertial Navigation System

A FOG-based Inertial Navigation System (INS) is a high-precision navigation solution that utilizes a FOG-based Inertial Measurement Unit (IMU). The IMU measures angular velocity and linear acceleration, enabling the calculation of position, velocity, and orientation without relying on external signals like GPS. By integrating advanced algorithms, FOG-based INS ensures accurate and reliable navigation in dynamic, GPS-denied environments, making it indispensable for modern navigation systems.



## MEMS-based Inertial Sensor Solution

Our MEMS-based inertial sensor solution provides compact, lightweight, and cost-effective navigation and motion sensing technologies, ranging from gyroscopes to complete Inertial Measurement Unit (IMU), and Inertial Navigation System (INS). These sensors leverage MEMS technology to deliver reliable performance in applications requiring precise motion tracking and orientation.

### Inertial Navigation System for Gyrocompass

#### FN 210G



• Heading Accuracy	0.1° · sec (LAT)(w/o GPS-aided)
• Attitude Accuracy	0.01°
• Operating Voltage	9 to 36 VDC
• Dimension	330 mm x 192 mm x 180 mm
• Weight	< 15 kg

### GPS-Aided Inertial Navigation System

#### FN 180-S



• Heading with Dual Antenna	0.15° - 0.08°
• Pitch & Roll Accuracy(with GNSS)	0.005° RMS
• Heave Resolution	0.01 m
• Operating Voltage	9 to 36 VDC
• Dimension	160 mm x 149 mm x 96 mm
• Weight	< 2.1 kg

### FOG-based MRU/AHRS/INS

#### FN 180-C



• Heading with Dual Antenna	0.15° - 0.08°
• Pitch & Roll Accuracy(with GNSS)	0.005° RMS
• Heave Resolution	0.01 m
• Operating Voltage	9 to 36 VDC
• Dimension	88.9 mm x 129 mm
• Weight	950 g

### Three Axis Gyroscope

#### TAG-304



• Bias In-run Stability	2.0° /hr
• Scale Factor Accuracy	1000 PPM
• Angle Random Walk	0.2°/√hr
• Dimension	19.5 mm x 15.2 mm x 5.5 mm
• Weight	10 g

### Inertial Measurement Unit

#### Kernel-210



• Gyro Bias In-run Stability	1.0° /hr
• Gyro Angle Random Walk	0.2°/√hr
• Accel. Bias In-run Stability	0.005 mg (RMS,8g)
• Accel. Operating Range	8 g, 15 g, 40 g
• Dimension	28.38 mm x 19.5 mm x 10.5 mm
• Weight	15 g

### GPS-aided Inertial Navigation System

#### INS-U



• Heading Accuracy (GNSS)	0.3° RMS
• Pitch & Roll Accuracy(GNSS)	0.05° RMS
• GNSS	Single GNSS Antenna
• Operating Voltage	5 to 32 VDC
• Dimension	82 mm x 40 mm x 26 mm
• Weight	< 200 g